### Field Review of the Draft K-12 Grade Span Expectations (GSEs) in Science

# Rhode Island Grade Span Expectations K-12 in Science Review – Grade Span K-4

#### **Please Note:**

Field Review input needs to be returned to RIDE by Thursday, December 1, 2005.

Please return completed information to:

Pat Kozaczka RI Department of Education Office of Instruction 255 Westminster Street Providence, RI 02903 FAX: 401-222-6033

Pat.Kozaczka@ride.ri.gov

**NOTE:** You may submit a compilation of comments by attachment electronically to Peter McLaren at <a href="mailto:peter.mclaren@ride.ri.gov">peter.mclaren@ride.ri.gov</a>

Any questions regarding Field Review process may be directed to Peter McLaren (<a href="Peter.McLaren@ride.ri.gov">Peter.McLaren@ride.ri.gov</a>) at 222-8454 or Linda A. Jzyk (<a href="Linda.Jzyk@ride.ri.gov">Linda.Jzyk@ride.ri.gov</a>) at 222-8473.

# Field Review of the Draft K-12 Grade Span Expectations (GSEs) in Science

#### **Directions:**

- 1) Begin the review process using the field review packet that most closely aligns with the grade level(s) in which you are most familiar. There are three review packets based upon the grade spans that will be used for large-scale assessment (K-4, 5-8, & high school).
- 2) Complete the Reviewer Information form found on page 2.
- 3) Read in the GSE packet "About the Draft Rhode Island K-12 Grade Span Expectations in Science: to understand how the draft science GSEs were developed and to familiarize yourself with the format of the document and the relationships between the Statements of Enduring Knowledge (EK), the state Assessment Targets, the Unifying Themes, the cross-grade span Stems and the GSEs.
- 4) Review **Appendix A: GSE Development in Science** for greater understanding of the nature of the science GSEs including the criteria for their design.
- 5) Read the following questions which form the basis for this field review document:
  - Question 1: Is the GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and state assessment?
  - Question 2: Are the differences between the GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K high school.
  - Question 3: Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's science program at that grade span?
  - Question 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved?
  - Question 5: What science content (important concepts) is missing in these draft science GSEs? Where are there gaps in content? This information is most essential for developing the science GSEs for local curriculum, instruction and assessment.
- 6) Locate the grade span you are reviewing in the GSE document. Notice that the GSEs listed in the review packet are detailed, in order, by domain, then by Statement of Enduring Knowledge, and finally by the corresponding assessment target. To help specify the GSE on the review packet the initial portion of the GSE, as listed in the GSE document, has been written next to the GSE number in the review packet.
- 7) Work through questions 1, 2, and 3 for each GSE within that grade span. Then answer question 4 about the set of GSEs within the Statements of Enduring Knowledge. Notice there is a place to code a response to each question and a place to provide comments.

# Rhode Island K-12 Grade Span Expectations in Science – Field Review Reviewer Information

Name	
District/Organization:	
School	or Other
Position:	
Grade level and or course(s) you are teachi	ing
Number of years in that position	
Certification(s)	
E-mail Address:	
Science Curriculum/textbook used for instr	ruction
Participation on other district and statewick curriculum committee, school improvement to	de teams (e.g. Science GSE development team, district eam, peer review team

### **Question #1: Clarity of GSE**

Is the GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and state assessment? (Do I understand what learning will be assessed on the state assessment and the related curricular and/or instructional aspects?) If not, what aspect of the GLE needs further clarification? (E.g. clarify terminology, give examples, etc.)

### LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).

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LS1 (K-4) - INQ+POC -1 Sort/classify different liv			Comments
different characteristics. Describe why organisms be evidence about how they are alike or not alike.	eiong to each gr	oup or cue	
•	Curriculum/	State	
GSEs	Instruction	State Assessment	
LS1 (K-2) –1a distinguishing between	o	O	
LS1 (K-2) –1a distinguishing between LS1 (K-2) –1b identifying and sorting	0	0	
LS1 (K-2) – Ic observing and recording the	0	0	
LS1 (3-4) –1a citing evidence to distinguish	0	0	
LS1 (3-4) –1b identifying, sorting and	0	0	
LS1 (3-4) –1c recording and analyzing	0	О	
LS1 (3-4) –1d citing evidence (e.g., prior	0	0	
LS1 (K-4) SAE -2 Identify the basic needs of plants	s and animals in	order to stay	Comments
alive. (i.e., water, air, food, space)			
CCE-	Cumic-l	C4-4-	
GSEs	Curriculum/ Instruction	State Assessment	
I C1 (K 2) 20 observing that plants need			
LS1 (K-2)-2a observing that plants need LS1 (3-4)-2a observing that plants need	0	0	
• .			
LS1 (K-4) POC -3 Predict, sequence or compare th			Comments
plants and animals (e.g., put images of life stages of	<sup>r</sup> an organism in	order,	
predict the next stage in sequence, compare two org	anisms).		
GSEs	Curriculum/	State	
	Instruction	Assessment	
LS1 (K-2)– 3a observing and scientifically	0	0	
LS1 (K-2)– 3b sequencing the life cycle of a	0	0	
LS1 (3-4)– 3a oobserving changes and recording	0	0	
LS1 (3-4)– 3b sequencing the life cycle of	0	0	
LS1 (3-4)– 3c comparing the life cycles of	0	О	
			Comments
ISI (K-4) FAF _4 Identify and explain how the ph	vsical structures	s of an	Comments
LS1 (K-4) FAF -4 Identify and explain how the ph			Comments
organism (plants or animals) allow it to survive in it			Comments
organism (plants or animals) allow it to survive in it roots for water; nose to smell fire.	s habitat/enviro	nment (e.g.,	Comments
organism (plants or animals) allow it to survive in it	s habitat/enviro	nment (e.g., State	Comments
organism (plants or animals) allow it to survive in it roots for water; nose to smell fire.  GSEs	s habitat/enviro	nment (e.g.,	Comments
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organism (plants or animals) allow it to survive in it roots for water; nose to smell fire.  GSEs  LS1 (K-2)— 4a identifying the specific functions LS1 (3-4)— 4a identifying and explaining how LS1 (3-4)—4b analyzing the structures needed	Curriculum/ Instruction o o	State Assessment	
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organism (plants or animals) allow it to survive in it roots for water; nose to smell fire.  GSEs  LS1 (K-2)— 4a identifying the specific functions LS1 (3-4)— 4a identifying and explaining how LS1 (3-4)—4b analyzing the structures needed	Curriculum/ Instruction  s through a	State Assessment  o o o o n ecosysten	<b>.</b>
organism (plants or animals) allow it to survive in it roots for water; nose to smell fire.  GSEs  LS1 (K-2)— 4a identifying the specific functions LS1 (3-4)— 4a identifying and explaining how LS1 (3-4)—4b analyzing the structures needed  LS2 - Matter cycles and energy flows  LS2 (K-4) SAE –5 Recognize that energy is needed and grow or identify where a plant or animal gets it.	Curriculum/ Instruction  s through a  for all organism s energy.	State Assessment  o o o o o o o o o o o o o o o o o o	<b>.</b>
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organism (plants or animals) allow it to survive in it roots for water; nose to smell fire.  GSEs  LS1 (K-2)— 4a identifying the specific functions LS1 (3-4)— 4a identifying and explaining how LS1 (3-4)—4b analyzing the structures needed  LS2 - Matter cycles and energy flows  LS2 (K-4) SAE—5 Recognize that energy is needed and grow or identify where a plant or animal gets its  GSEs  LS2 (K-2)—5a caring for plants and/or animals LS2 (3-4)—5a identifying source of energy  LS2 (K-4) SAE—6 Describe ways plants and animal shelter, nesting, food).  GSEs  LS2 (K-2)—6a acting out or constructing simple LS2 (K-2)—6b using information about a simple	s habitat/enviro  Curriculum/ Instruction  s through a  for all organism s energy.  Curriculum/ Instruction  curriculum/ Instruction  Curriculum/ Instruction  curriculum/ Instruction	State Assessment  o o o o o o o o o o o o o o o o o o	Comments
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#### Question #1: Clarity of GSE Is the GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and state assessment? (Do I understand what learning will be assessed on the state assessment and the related curricular and/or instructional aspects?) If not, what aspect of the GLE needs further clarification? (E.g. clarify terminology, give examples, etc.) LS3 - Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry). Comments LS3 (K-4) SAE -7 Using information (data or scenario), explain how changes in the environment can cause organisms to respond (e.g., survive there and reproduce, move away, die). Curriculum/ State Instruction Assessment LS3 (3-4) -7a explaining what plants or animals... LS3 (3-4) -7b explaining the balance of the... LS 4 - Humans are similar to other species in many ways, and yet are unique among Earth's life forms. LS4 (K-4) FAF -8 Identify what the physical structures of humans do (e.g., Comments sense organs - eyes, ears, skin, etc.) or compare physical structures of humans to similar structures of animals **GSEs** Curriculum/ State Instruction 0 0 LS4 (K-2)-8a identifying the five senses and ... LS4 (K-2)-8b observing, identifying, and... Ο 0 0 0 LS4 (K-2)-8c identifying the senses needed to ... 0 0 LS4 (3-4)-8a showing connections between... 0 0 LS4 (3-4)-8b comparing and analyzing external.... LS4 (K-4) POC -9 Distinguish between characteristics of humans that are Comments inherited from parents (i.e., hair color, height, skin color, eye color) and others that are learned (e.g., riding a bike, singing a song, playing a game, reading) Instruction Assessment LS4 (K-2) –9a observing and comparing their.... LS4 (K-2) –9b identifying that some behaviors...

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LS4 (3-4) –9a identifying similarities that are...

LS4 (3-4) -9b identifying that some behaviors...

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### **Question # 2: Clarity of Grade Span Differences**

Are the differences between the GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.

NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This may be due to increasing difficulty in some related GSE.

# LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).

LSI (K-4) - INQ+POC -1 Sort/classify different liv different characteristics. Describe why organisms b			Comments
evidence about how they are alike or not alike.  GSEs	Differences	Differences	
ODES	are clear	not clear	
LS1 (K-2) –1a distinguishing between	0	0	
LS1 (K-2) –1b identifying and sorting	0	0	
LS1 (K-2) – Ic observing and recording the	0	0	
LS1 (3-4) –1a citing evidence to distinguish	0	0	
LS1 (3-4) –1b identifying, sorting and	0	0	
LS1 (3-4) –1c recording and analyzing	0	0	
LS1 (3-4) –1d citing evidence (e.g., prior	0	0	
LS1 (K-4) SAE -2 Identify the basic needs of plantalive. (i.e., water, air, food, space).	s and animals in	order to stay	Comments
	Differences	Differences	
GSEs	are clear	not clear	
LS1 (K-2)-2a observing that plants need	0	0	
			Comments
LSI (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org	ne life stages of f f an organism in fanisms).	organisms – n order,	Comments
LSI (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of	le life stages of f an organism in	organisms –	Comments
LSI (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs	ne life stages of an organism in anisms).  Differences	organisms – n order, Differences	Comments
LSI (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs  LSI (K-2)- 3a observing and scientifically	ne life stages of fan organism in canisms).  Differences are clear	organisms – a order,  Differences not clear	Comments
LSI (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs	e life stages of f an organism in anisms).  Differences are clear	organisms – a order,  Differences not clear	Comments
LS1 (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs  LS1 (K-2)- 3a observing and scientifically LS1 (K-2)- 3b sequencing the life cycle of a	de life stages of f an organism in canisms).  Differences are clear	organisms – a order,  Differences not clear	Comments
LS1 (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs  LS1 (K-2)- 3a observing and scientifically LS1 (K-2)- 3b sequencing the life cycle of a LS1 (3-4)- 3a observing changes and recording LS1 (3-4)- 3b sequencing the life cycle of	te life stages of an organism in anisms).  Differences are clear	organisms – a order,  Differences not clear	Comments
LS1 (K-4) POC –3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs  LS1 (K-2) – 3a observing and scientifically LS1 (K-2) – 3b sequencing the life cycle of a LS1 (3-4) – 3a observing changes and recording LS1 (3-4) – 3b sequencing the life cycle of LS1 (3-4) – 3c comparing the life cycles of  LS1 (K-4) FAF –4 Identify and explain how the phorganism (plants or animals) allow it to survive in it.	ne life stages of f an organism in anisms).  Differences are clear	organisms – n order,  Differences not clear	Comments
LS1 (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs  LS1 (K-2) - 3a observing and scientifically LS1 (K-2) - 3b sequencing the life cycle of a LS1 (3-4) - 3a observing changes and recording LS1 (3-4) - 3b sequencing the life cycle of LS1 (3-4) - 3c comparing the life cycles of  LS1 (K-4) FAF -4 Identify and explain how the ph.	ne life stages of f an organism in anisms).  Differences are clear	organisms – n order,  Differences not clear	
LSI (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs  LSI (K-2) - 3a observing and scientifically LSI (K-2) - 3b sequencing the life cycle of a LSI (3-4) - 3a observing changes and recording LSI (3-4) - 3b sequencing the life cycle of LSI (3-4) - 3c comparing the life cycles of  LSI (K-4) FAF -4 Identify and explain how the phorganism (plants or animals) allow it to survive in it roots for water; nose to smell fire.)	pe life stages of f an organism in anisms).  Differences are clear	organisms – n order,  Differences not clear	
LS1 (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs  LS1 (K-2) - 3a observing and scientifically LS1 (K-2) - 3b sequencing the life cycle of a LS1 (3-4) - 3a observing changes and recording LS1 (3-4) - 3b sequencing the life cycle of LS1 (3-4) - 3c comparing the life cycles of  LS1 (K-4) FAF -4 Identify and explain how the phorganism (plants or animals) allow it to survive in it roots for water; nose to smell fire.)  GSEs	pe life stages of f an organism in canisms).  Differences are clear  o o o o o o o o o o o o o o o o o o	organisms – n order,  Differences not clear  o o o o o o o o o o o o o o o o o o	
LS1 (K-4) POC -3 Predict, sequence or compare the plants and animals (e.g., put images of life stages of predict the next stage in sequence, compare two org GSEs  LS1 (K-2)— 3a observing and scientifically LS1 (K-2)— 3b sequencing the life cycle of a LS1 (3-4)— 3a observing changes and recording LS1 (3-4)— 3b sequencing the life cycle of LS1 (3-4)— 3c comparing the life cycles of  LS1 (K-4) FAF—4 Identify and explain how the phorganism (plants or animals) allow it to survive in iteroots for water; nose to smell fire.)	pe life stages of f an organism in anisms).  Differences are clear  o o o o o o o o o o o o o o o o o o	Differences not clear  s of an nument (e.g.,	

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#### **Question #2: Clarity of Grade Span Differences** Are the differences between the GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school. NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This may be due to increasing difficulty in some related GSE. LS2 - Matter cycles and energy flows through an ecosystem. Comments LS2 (K-4) SAE -5 Recognize that energy is needed for all organisms to stay alive and grow or identify where a plant or animal gets its energy. **GSEs** Differences Differences are clear not clear LS2 (K-2)-5a caring for plants and/or animals 0 LS2 (3-4) -5a identifying source of energy Comments LS2 (K-4) SAE -6 Describe ways plants and animals depend on each other (e.g., shelter, nesting, food). **GSEs** Differences Differences are clear not clear LS2 (K-2)- 6a acting out or constructing simple... LS2 (K-2)-6b using information about a simple... 0 0 LS2 (3-4) – 6a demonstrating in a food web... 0 0 LS2 (3-4)- 6b using information about.... 0 LS3 - Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry). LS3 (K-4) SAE -7 Using information (data or scenario), explain how changes in Comments the environment can cause organisms to respond (e.g., survive there and reproduce, move away, die). **GSEs** Differences Differences are clear not clear LS3 (3-4) -7a explaining what plants or animals... LS3 (3-4) -7b explaining the balance of the... LS 4 - Humans are similar to other species in many ways, and yet are unique among Earth's life forms. LS4 (K-4) FAF-8 Identify what the physical structures of humans do (e.g., Comments sense organs - eyes, ears, skin, etc.) or compare physical structures of humans to similar structures of animals. Differences Differences **GSEs** are clear not clear LS4 (K-2)-8a identifying the five senses and ... 0 0 LS4 (K-2)-8b observing, identifying, and... 0 0 LS4 (K-2)-8c identifying the senses needed to ... 0 0 LS4 (3-4)-8a showing connections between... 0 LS4 (3-4)-8b comparing and analyzing external.... LS4 (K-4) POC -9 Distinguish between characteristics of humans that are Comments

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Differences

not clear

0

inherited from parents (i.e., hair color, height, skin color, eye color) and others that are learned (e.g., riding a bike, singing a song, playing a game, reading).

LS4 (K-2) -9a observing and comparing their....

LS4 (K-2) -9b identifying that some behaviors...

LS4 (3-4) -9a identifying similarities that are...

LS4 (3-4) –9b identifying that some behaviors.

Differences

are clear

0

0

0

**GSEs** 

#### **Question 3: Expected Rigor** Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's science program at that grade span? LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species). LS1 (K-4) - INQ+POC-1 Sort/classify different living things using similar and Comments different characteristics. Describe why organisms belong to each group or cite evidence about how they are alike or not alike. More **GSEs** Rigorous Rigorous Rigorous LS1 (K-2) -1a distinguishing between... 0 0 LS1 (K-2) -1b identifying and sorting... 0 0 0 LS1 (K-2) - lc observing and recording the ... 0 0 LS1 (3-4) -1a citing evidence to distinguish... 0 0 0 LS1 (3-4) -1b identifying, sorting and... 0 0 0 LS1 (3-4) -1c recording and analyzing... 0 0 LS1 (3-4) -1d citing evidence (e.g., prior. LSI (K-4) SAE -2 Identify the basic needs of plants and animals in order to stay Comments alive. (i.e., water, air, food, space.) **GSEs** More As Less Rigorous Rigorous Rigorous LS1 (K-2)-2a observing that plants need... 0 LS1 (3-4)-2a observing that plants need... $\overline{LSI}$ (K-4) POC -3 Predict, sequence or compare the life stages of organisms Comments plants and animals (e.g., put images of life stages of an organism in order, predict the next stage in sequence, compare two organisms) GSEs More As Less Rigorous Rigorous Rigorous LS1 (K-2)- 3a observing and scientifically... 0 0 LS1 (K-2)-3bsequencing the life cycle of a... LS1 (3-4) – 3a observing changes and recording... 0 0 0 LS1 (3-4)- 3b sequencing the life cycle of... 0 0 0 LS1 (3-4)-3c comparing the life cycles of... Comments LS1 (K-4) FAF-4 Identify and explain how the physical structures of an organism (plants or animals) allow it to survive in its habitat/environment (e.g., roots for water; nose to smell fire). GSEs More Rigorous Rigorous Rigorous LS1 (K-2)- 4a identifying the specific functions... LS1 (3-4)- 4a identifying and explaining how... 0 LS1 (3-4)-4b analyzing the structures needed... LS2 - Matter cycles and energy flows through an ecosystem. Comments LS2 (K-4) SAE -5 Recognize that energy is needed for all organisms to stay alive and grow or identify where a plant or animal gets its energy. GSEs More As Less Rigorous Rigorous Rigorous LS2 (K-2)-5a caring for plants and/or animals 0 0 0 LS2 (3-4) -5a identifying source of energy 0 0 0 Comments LS2 (K-4) SAE -6 Describe ways plants and animals depend on each other (e.g., shelter. nesting. food) More Less Rigorous Rigorous Rigorous LS2 (K-2)- 6a acting out or constructing simple... 0 LS2 (K-2)-6b using information about a simple... 0 0 0 LS2 (3-4)- 6a demonstrating in a food web... 0 0 LS2 (3-4)– 6b using information about.... 0

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Question 3: Expected Rigor Is the GSE more rigorous, similar science program at that grade spa		ess rigo	rous tha	an what is presently expected in your school's
1 0 0 1		change	over time	e (structures, behaviors, and biochemistry).
LS3 (K-4) SAE -7 Using information (data or scene environment can cause organisms to respond (e.g., smove away, die).				Comments
GSEs	More Rigorous	As Rigorous	Less Rigorous	
LS3 (3-4) –7a explaining what plants or animals LS3 (3-4) –7b explaining the balance of the	0	0	0	
LS 4 - Humans are similar to other s	pecies in	many v	vays, and	yet are unique among Earth's life forms.
LS4 (K-4) FAF -8 Identify what the physical struct	ures of hum	ans do (e.g.	. sense	Comments
organs – eyes, ears, skin, etc.) or compare physical s structures of animals.	tructures of			Comment
	More Rigorous		similar	
structures of animals.  GSEs	More	humans to As	similar	
structures of animals.	More Rigorous	As Rigorous	Less Rigorous	
structures of animals.  GSEs  LS4 (K-2)-8a identifying the five senses and	More Rigorous	As Rigorous	Less Rigorous	
structures of animals.  GSEs  LS4 (K-2)-8a identifying the five senses and LS4 (K-2)-8b observing, identifying, and LS4 (K-2)-8c identifying the senses needed to LS4 (3-4)-8a showing connections between	More Rigorous	As Rigorous	Less Rigorous	
structures of animals.  GSEs  LS4 (K-2)-8a identifying the five senses and LS4 (K-2)-8b observing, identifying, and LS4 (K-2)-8c identifying the senses needed to	More Rigorous	As Rigorous	Less Rigorous	
Structures of animals.  GSEs  LS4 (K-2)-8a identifying the five senses and LS4 (K-2)-8b observing, identifying, and LS4 (K-2)-8c identifying the senses needed to LS4 (3-4)-8a showing connections between	More Rigorous	As Rigorous  o o o o o o ans that are others that a	Less Rigorous  O O O O O O O O O O O O O O O O O O	Comments
GSEs  LS4 (K-2)-8a identifying the five senses and LS4 (K-2)-8b observing, identifying, and LS4 (K-2)-8c identifying the senses needed to LS4 (3-4)-8a showing connections between LS4 (3-4)-8b comparing and analyzing external  LS4 (K-4) POC -9 Distinguish between characteris from parents (i.e., hair color, height, skin color, eye	More Rigorous  o o o o o o o o o o o o o o o o o o	As Rigorous  o o o o o o ans that are others that a ding) As	Less Rigorous  o o o inherited tre	
Structures of animals.  GSEs  LS4 (K-2)-8a identifying the five senses and LS4 (K-2)-8b observing, identifying, and LS4 (K-2)-8c identifying the senses needed to LS4 (3-4)-8a showing connections between LS4 (3-4)-8b comparing and analyzing external  LS4 (K-4) POC -9 Distinguish between characteris from parents (i.e., hair color, height, skin color, eye learned (e.g., riding a bike, singing a song, playing of GSEs	More Rigorous	As Rigorous  o o o o o o o o o o o o o o o o o o	Less Rigorous  o o o o inherited	
GSEs  LS4 (K-2)-8a identifying the five senses and LS4 (K-2)-8b observing, identifying, and LS4 (K-2)-8c identifying the senses needed to LS4 (3-4)-8a showing connections between LS4 (3-4)-8b comparing and analyzing external  LS4 (K-4) POC -9 Distinguish between characteris from parents (i.e., hair color, height, skin color, eye learned (e.g., riding a bike, singing a song, playing a GSEs  LS4 (K-2) -9a observing and comparing their	More Rigorous  o o o o o o o o o o o o o o o o o o	As Rigorous  o o o o o o o o o o o o o o o o o o	Less Rigorous  o o o o inherited tre  Less Rigorous	
GSEs  LS4 (K-2)-8a identifying the five senses and LS4 (K-2)-8b observing, identifying, and LS4 (K-2)-8c identifying the senses needed to LS4 (3-4)-8a showing connections between LS4 (3-4)-8b comparing and analyzing external  LS4 (K-4) POC -9 Distinguish between characteris from parents (i.e., hair color, height, skin color, eye learned (e.g., riding a bike, singing a song, playing a GSEs	More Rigorous  o o o o o o o o o o o o o o o o o o	As Rigorous  o o o o o o o o o o o o o o o o o o	Less Rigorous  o o o o inherited tre  Less Rigorous	

 Question #4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved? Go back and review ALL the GSEs within the Statement of Enduring Knowledge looking at them as a "GSE set." Does the set of GSEs within this Statement of Enduring Knowledge have the potential to promote coherent instruction? GSEs for this EK Statement coherent as a set LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species). LS1 (K-4) - INQ+POC-1 Sort/classify different living things using similar and Comments different characteristics. Describe why organisms belong to each group or cite evidence about how they are alike or not alike. GSEs Individual coherence with the Statement of Enduring Knowledge Yes` LS1 (K-2) -1a distinguishing between... 0 0 LS1 (K-2) -1b identifying and sorting... 0 0 LS1 (K-2) - lc observing and recording the... 0 0 LS1 (3-4) -1a citing evidence to distinguish... 0 0 LS1 (3-4) -1b identifying, sorting and... 0 LS1 (3-4) -1c recording and analyzing... Ο Ο LS1 (3-4) -1d citing evidence (e.g., prior... Comments LSI (K-4) SAE -2 Identify the basic needs of plants and animals in order to stay alive. (i.e., water, air, food, space). Individual coherence with the **GSEs** Statement of Enduring Knowledge Yes` No LS1 (K-2)-2a observing that plants need... LS1 (3-4)-2a observing that plants need... Comments LS1 (K-4) POC -3 Predict, sequence or compare the life stages of organisms plants and animals (e.g., put images of life stages of an organism in order, predict the next stage in sequence, compare two organisms) Individual coherence with the **GSEs** Statement of Enduring Knowledge Yes` No LS1 (K-2)– 3a observing and scientifically... 0 0 LS1 (K-2)-3b sequencing the life cycle of a... 0 0 LS1 (3-4)- 3a observing changes and recording... LS1 (3-4)- 3b sequencing the life cycle of... 0 0 LS1 (3-4)- 3c comparing the life cycles of... Comments LSI (K-4) FAF-4 Identify and explain how the physical structures of an organism (plants or animals) allow it to survive in its habitat/environment (e.g., roots for water; nose to smell fire) Individual coherence with the **GSEs** Statement of Enduring Knowledge Yes` No LS1 (K-2)- 4a identifying the specific functions... 0 LS1 (3-4)- 4a identifying and explaining how... LS1 (3-4)-4b analyzing the structures needed.. 0 0

Ouestion # 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved? Go back and review ALL the GSEs within the Statement of Enduring Knowledge looking at them as a "GSE set." Does the set of GSEs within this Statement of Enduring Knowledge have the potential to promote coherent GSEs for this EK Statement coherent as a set LS2 - Matter cycles and energy flows through an ecosystem. Yes No Comments LS2 (K-4) SAE -5 Recognize that energy is needed for all organisms to stay alive and grow or identify where a plant or animal gets its energy. Individual coherence with the Statement of Enduring Knowledge Yes No LS2 (K-2)-5a caring for plants and/or animals 0 0 LS2 (3-4) -5a identifying source of energy LS2 (K-4) SAE -6 Describe ways plants and animals depend on each other (e.g., shelter, nesting, food.) GSEs Individual coherence with the Statement of Enduring Knowledge Yes No LS2 (K-2)- 6a acting out or constructing simple... 0 0 LS2 (K-2)-6b using information about a simple... 0 0 LS2 (3-4)- 6a demonstrating in a food web... 0 0 LS2 (3-4)- 6b using information about.... GSEs for this EK Statement coherent as a set LS3 - Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry). Ves No Comments LS3 (K-4) SAE -7 Using information (data or scenario), explain how changes in the environment can cause organisms to respond (e.g., survive there and reproduce, move away, die). Individual coherence with the **GSEs** Statement of Enduring Knowledge No Yes` LS3 (3-4) -7a explaining what plants or animals... LS3 (3-4) -7b explaining the balance of the... LS - 4 Humans are similar to other species in many ways, and yet are GSEs for this EK Statement coherent as a set unique among Earth's life forms. Yes LS4 (K-4) FAF -8 Identify what the physical structures of humans do (e.g., sense Comments organs – eyes, ears, skin, etc.) or compare physical structures of humans to similar structures of animals. Individual coherence with the GSEs Statement of Enduring Knowledge No LS4 (K-2)-8a identifying the five senses and ... LS4 (K-2)-8b observing, identifying, and... 0 0 LS4 (K-2)-8c identifying the senses needed to ... 0 0 LS4 (3-4)-8a showing connections between... 0 0 LS4 (3-4)-8b comparing and analyzing external.... Comments LS4 (K-4) POC -9 Distinguish between characteristics of humans that are inherited from parents (i.e., hair color, height, skin color, eye color) and others that are learned (e.g., riding a bike, singing a song, playing a game, reading) Individual coherence with the Statement of Enduring Knowledge Yes No LS4 (K-2) –9a observing and comparing their.... Ο LS4 (K-2) -9b identifying that some behaviors... 0 0 LS4 (3-4) -9a identifying similarities that are... 0

LS4 (3-4) –9b identifying that some behaviors...

#### **Question #1: Clarity of GSE** Is the GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and state assessment? (Do I understand what learning will be assessed on the state assessment and the related curricular and/or instructional aspects?) If not, what aspect of the GLE needs further clarification? (E.g. clarify terminology, give examples, etc.) PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance). PS1 (K-4) INQ -1 Collect and organize data about physical properties in Comments order to classify objects or draw conclusions about objects and their characteristic properties (e.g., temperature, color, size, shape, weight, texture, flexibility). Curriculum/ **GSEs** Instruction Assessment PS1 (K-2)-1a identifying, comparing, and... PS1 (K-2)-1b recording observations/data... 0 0 PS1 (K-2)-1c using attributes of properties... 0 0 PS1 (3-4)-1a identifying, comparing, and... 0 0 PS1 (3-4)-1b recording and analyzing... 0 0 PS1 (3-4)-1c citing evidence (e.g., prior ... PS1 (3-4)-1d observing physical changes... PS1 (K-4) POC -2 Make a prediction about what might happen to the state of Comments common materials when heated or cooled or categorize materials as solid, liquid, or gas. GSEs Curriculum/ State Instruction Assessment PS1 (K-2)-2a describing properties of solids... PS1 (K-2)-2b identifying and comparing.... 0 PS1 (K-2)-2c making logical predictions... 0 PS1 (3-4)-3a measuring the weight of objects... 0 0 PS1 (3-4)-3b using measures of weight to... 0 0 PS1 (3-4)-3c showing that the weight of an. PS1 (K-4) SAE -3 Use measures of weight (data) to demonstrate that the Comments whole equals the sum of its parts. **GSEs** Curriculum/ State Instruction Assessment PS1 (K-2)-3a exploring the concept of weight... 0 PS1 (3-4)-3a measuring the weight of objects... 0 0 0 0 PS1 (3-4)-3b using measures of weight to... PS1 (3-4)-3c showing that the weight of an. PS2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed. PS2 (K-4) SAE -4 Given a specific example or illustration (e.g., simple closed Comments circuit, rubbing hands together), predict the observable effects of energy (i.e., light bulb lights, a bell rings, hands warm up (e.g., a test item might ask, "what will happen when...?"). Curriculum/ State GSEs Instruction Assessment PS2 (K-2)-5a investigating with the sun... PS2 (K-2)-4b using the senses to experiment... 0 0 PS2 (K-2)-4c identifying the sun as a source ... 0 0 PS2 (3-4)-4a investigating observable effects... 0 0 PS2 (3-4)-4b using a variety of objects to... 0 PS2 (3-4)-4c describing or showing in many... 0 0 PS2 (3-4)-4d building a complete circuit... 0 0 PS2 (3-4)-4e using experimental data to ... 0

0

0

PS2 (3-4)-4f making observations of natural..

### **Question #1: Clarity of GSE**

Is the GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and state assessment? (Do I understand what learning will be assessed on the state assessment and the related curricular and/or instructional aspects?) If not, what aspect of the GLE needs further clarification? (E.g. clarify terminology, give examples, etc.)

## PS2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.

but cannot be destroyed.	<b>5</b>		
PS2 (K-4) SAE – 5 Use observations of light in re objects/substances to describe the properties of lig- or absorbed)		cted, refracted,	Comments
GSEs	Curriculum/ Instruction	State Assessment	
PS2 (K-2)-5a demonstrating when a shadow	0	0	
PS2 (3-4)-5a explaining what occurs when	0	0	
PS2 (3-4)-5b investigating with light sources	0	0	
PS2 (K-4) SAE+INQ -6 Experiment, observe, or	predict how hed	at might move	Comments
from one object to another.	1 a	g, ,	
GSEs	Curriculum/ Instruction	State Assessment	
PS2 (K-2)-6a describing that the sun warms	0	0	
PS2 (K-2)-6b showing that heat moves from	0	0	
PS2 (3-4)-6a describing how heat moves from	0	0	
PS2 (3-4)-6b showing that heat moves from	0	0	
PS3 - The motion of an object is aff	ected by fo	rces.	
PS3 (K-4)-INQ+SAE -7 Use data to predict how	a change in for		Comments
- 20 (11 1) 1112 101111 / Coc unit to pretite 110 W	a change in jor	ce	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).			Comments
(greater/less) might affect the position, direction of			Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).	f motion, or spe	ed of an object State	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs	f motion, or spe  Curriculum/ Instruction	State Assessment	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object	Curriculum/ Instruction	State Assessment	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed	f motion, or spe  Curriculum/ Instruction	State Assessment	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to	Curriculum/ Instruction	State Assessment	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that	f motion, or spe	State Assessment	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to	Curriculum/ Instruction	State Assessment	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that	Curriculum/ Instruction	State Assessment	Comments
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that PS3 (3-4)-7d conducting experiments to  PS3 (K-4) INQ+ SAE -8 Use observations of mag objects to describe the properties of magnetism (i.e.	Curriculum/ Instruction	State Assessment	
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that PS3 (3-4)-7d conducting experiments to  PS3 (K-4) INQ+ SAE -8 Use observations of mag objects to describe the properties of magnetism (i.e. objects or has no effect.	f motion, or spe  Curriculum/ Instruction  curricular/	State Assessment   o  to other	
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that PS3 (3-4)-7d conducting experiments to  PS3 (K-4) INQ+ SAE -8 Use observations of mag objects to describe the properties of magnetism (i.e.	f motion, or spe  Curriculum/ Instruction  curriculum/ curriculum/ curriculum/  Curriculum/	State Assessment   to other el certain	
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that PS3 (3-4)-7d conducting experiments to  PS3 (K-4) INQ+ SAE -8 Use observations of mag objects to describe the properties of magnetism (i.e. objects or has no effect.	Curriculum/ Instruction  curriculum/ Instruction  curriculum/ curriculum/ Instruction	State Assessment  to other el certain  State Assessment	
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that PS3 (3-4)-7d conducting experiments to  PS3 (K-4) INQ+ SAE –8 Use observations of mag objects to describe the properties of magnetism (i.e. objects or has no effect.  GSEs  PS3 (K-2)-8a observing and sorting objects	Curriculum/ Instruction  curriculum/ Instruction  curriculum/ curriculum/ Instruction  curriculum/ Cur	State Assessment   to other el certain  State Assessment	
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that PS3 (3-4)-7d conducting experiments to PS3 (K-4) INQ+ SAE -8 Use observations of mag objects to describe the properties of magnetism (i.e. objects or has no effect. GSEs  PS3 (K-2)-8a observing and sorting objects PS3 (3-4)-8a using prior knowledge and	curriculum/ Instruction  curriculum/ Instruction  curriculum/ curriculum/ Instruction  curriculum/	State Assessment  to other el certain  State Assessment	
(greater/less) might affect the position, direction of (e.g., ramps and balls).  GSEs  PS3 (K-2)-7a predicting the direction an object PS3 (K-2)-7b showing how pushing/pulling PS3 (K-2)-7c showing that different objects PS3 (3-4)-7a predicting the direction or speed PS3 (3-4)-7b describing position relative to PS3 (3-4)-7c investigating and describing that PS3 (3-4)-7d conducting experiments to  PS3 (K-4) INQ+ SAE -8 Use observations of mag objects to describe the properties of magnetism (i.e. objects or has no effect.  GSEs  PS3 (K-2)-8a observing and sorting objects	Curriculum/ Instruction  curriculum/ Instruction  curriculum/ curriculum/ Instruction  curriculum/ Cur	State Assessment   to other el certain  State Assessment	

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#### **Question #2: Clarity of Grade Span Differences**

Are the differences between the GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.

NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This may be due to increasing difficulty in some related GSE.

## PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance)

PSI (K-4) INQ -1 Collect and organize data above	ut pnysicai prope	erties in	Comments
order to classify objects or draw conclusions about	t objects and the	ir	
haracteristic properties (e.g., temperature, color,	size shane weio	ht texture	
	size, shape, weig	m, wature,	
flexibility)		1	
GSEs	Differences	Differences	
	are clear	not clear	
PS1 (K-2)-1a identifying, comparing, and	-	0	
PS1 (K-2)-1b recording observations/data	0	0	
` '	0	0	
S1 (K-2)-1c using attributes of properties	0	0	
S1 (3-4)-1a identifying, comparing, and	0	0	
S1 (3-4)-1b recording and analyzing	0	0	
S1 (3-4)-1c citing evidence (e.g., prior	9	0	
· · · — · · · · · · · · · · · · · · · ·	0	0	
S1 (3-4)-1d observing physical changes	0	0	
SI (K-4) POC -2 Make a prediction about what	might happen to	the state of	Comments

# PS1 (K-4) POC-2 Make a prediction about what might happen to the state of common materials when heated or cooled or categorize materials as solid, liquid, or gas.

GSEs	Differences are clear	Differences not clear
PS1 (K-2)-2a describing properties of solids	0	0
PS1 (K-2)-2b identifying and comparing	0	0
PS1 (K-2)-2c making logical predictions	0	0
PS1 (3-4)-2a measuring the weight of objects	0	0
PS1 (3-4)-2b using measures of weight to	0	0
PS1 (3-4)-2c showing that the weight of an	О	О

PS1 (K-4) SAE -3	Use measures of weight (data) to demonstrate that the
whole equals the st	um of its parts.

whole equals the sum of us parts.		
GSEs	Differences	Differences
	are clear	not clear
PS1 (K-2)-3a exploring the concept of weight	0	0
PS1 (3-4)-3a measuring the weight of objects	0	0
PS1 (3-4)-3b using measures of weight to	0	0
PS1 (3-4)-3c showing that the weight of an	0	0

### PS2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.

PS2 (K-4) SAE -4 Given a specific example or illustration (e.g., simple closed circuit, rubbing hands together), predict the observable effects of energy (i.e., light bulb lights, a bell rings, hands warm up (e.g., a test item might ask, "what will happen when...?").

GSEs

Differences

Differences

will happen when?").		
GSEs	Differences are clear	Differences not clear
PS2 (K-2)-4a and flashlights to describe how	0	0
PS2 (K-2)-4b using the senses to experiment	0	0
PS2 (K-2)-4c identifying the sun as a source	0	0
PS2 (3-4)-4a investigating observable effects	0	0
PS2 (3-4)-4b using a variety of objects to	0	0
PS2 (3-4)-4c describing or showing in many	0	0
PS2 (3-4)-4d building a complete circuit	0	0
PS2 (3-4)-4e using experimental data to	0	0
PS2 (3-4)-4f making observations of natural	0	0

Comments

Comments

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### **Question # 2: Clarity of Grade Span Differences**

Are the differences between the GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.

NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This may be due to increasing difficulty in some related GSE.

# PS2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.

v			
PS2 (K-4) SAE – 5 Use observations of light in re objects/substances to describe the properties of light or absorbed).		cted, refracted,	Comments
GSEs	Differences are clear	Differences not clear	
PS2 (K-2)-5a demonstrating when a shadow	0	0	
PS2 (3-4)-5a explaining what occurs when	0	0	
PS2 (3-4)-5b investigating with light sources	0	0	
PS2 (K-4) SAE+INQ -6 Experiment, observe, or	predict how hed	at might move	Comments
from one object to another.	•	o .	
GSEs	Differences	Differences	
	are clear	not clear	
PS2 (K-2)-6a describing that the sun warms	0	0	
PS2 (K-2)-6b showing that heat moves from	0	0	
PS2 (3-4)-6a describing how heat moves from	0	0	
PS2 (3-42)-6b showing that heat moves from	0	0	

### PS 3 - The motion of an object is affected by forces.

PS3 (K-4)-INQ+SAE -7 Use data to predict how a	a change in for	c e
(greater/less) might affect the position, direction of	0 0	
(e.g., ramps and balls).		•
GSEs	Differences	Differences
·	are clear	not clear
PS3 (K-2)-7a predicting the direction an object	0	0
PS3 (K-2)-7b showing how pushing/pulling	0	0
PS3 (K-2)-7c showing that different objects	0	0
PS3 (3-4)-7a predicting the direction or speed	0	0
PS3 (3-4)-7b describing position relative to	0	0
PS3 (3-4)-7c investigating and describing that	0	0
PS3 (3-4)-7d conducting experiments to	0	0
PG2 (T A) PVO GAT O V A		

PS3 (K-4) INQ+ SAE -8 Use observations of magnets in relation to other objects to describe the properties of magnetism (i.e., attract or repel certain objects or has no effect.

GCE-	Differences	Differences
GSEs	are clear	not clear
PS3 (K-2)-8a observing and sorting objects	0	0
PS3 (3-4)-8a using prior knowledge and	0	0
PS3 (3-4)-8b describing what happens when	0	0
PS3 (3-4)-8c exploring relative strength of	0	0

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#### **Question 3: Expected Rigor**

PS1 (3-4)-1d observing physical changes...

GSEs

Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's science program at that grade span?

### PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size or amount of substance).

PS1 (K-4) INQ -1 Collect and organize data about physical properties in order to classify objects or draw conclusions about objects and their characteristic properties (e.g., temperature, color, size, shape, weight, texture, flexibility.)

GSEs More As Less

(e.g., temperature, color, size, snape, weight, texture, flexibility.)						
GSEs	More Rigorous	As Rigorous	Less Rigorous			
PS1 (K-2)-1a identifying, comparing, and	0	0	0			
PS1 (K-2)-1b recording observations/data	0	0	0			
PS1 (K-2)-1c using attributes of properties	0	0	0			
PS1 (3-4)-1a identifying, comparing, and	0	0	0			
PS1 (3-4)-1b recording and analyzing	0	0	0			
PS1 (3-4)-1c citing evidence (e.g., prior	0	0	0			

PS1 (K-4) POC -2 Make a prediction about what might happen to the state of common materials when heated or cooled or categorize materials as solid, liquid, or gas.

r categ	orize materio	als as solid, l	iquid, or
_	More	As	Less
	Rigorous	Rigorous	Rigorous

	Rigorous	Rigorous	Rigorous
PS1 (K-2)-2a describing properties of solids	0	0	0
PS1 (K-2)-2b identifying and comparing	0	0	0
PS1 (K-2)-2c making logical predictions	0	0	0
PS1 (3-4)-3a measuring the weight of objects	0	0	0
PS1 (3-4)-3b using measures of weight to	0	0	0
PS1 (3-4)-3c showing that the weight of an	0	0	0

PSI (K-4) SAE –3 Use measures of weight (data) to demonstrate that the whole equals the sum of its parts.

equals the sum of its parts.							
GSEs	More Rigorous	As Rigorous	Less Rigorous				
PS1 (K-2)-3a exploring the concept of weight	0	0	0				
PS1 (3-4)-3a measuring the weight of objects	0	0	0				
PS1 (3-4)-3b using measures of weight to	0	0	0				
PS1 (3-4)-3c showing that the weight of an	0	0	0				

PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed.

PS2 (K-4) SAE -4 Given a specific example or illustration (e.g., simple closed circuit, rubbing hands together), predict the observable effects of energy (i.e., light bulb lights, a bell rings, hands warm up (e.g., a test item might ask, "what will happen when...?"),

GSEs	More Rigorous	As Rigorous	Less Rigorous
PS2 (K-2)-4a investigating with the sun	0	0	0
PS2 (K-2)-4b using the senses to experiment	0	0	0
PS2 (K-2)-4c identifying the sun as a source	0	0	0
PS2 (3-4)-4a investigating observable effects	0	0	0
PS2 (3-4)-4b using a variety of objects to	0	0	0
PS2 (3-4)-4c describing or showing in many	0	0	0
PS2 (3-4)-4d building a complete circuit	0	0	0
PS2 (3-4)-4e using experimental data to	0	0	0
PS2 (3-4)-4f making observations of natural	0	0	0

Comments

Comments

Comments

Comments

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#### **Question 3: Expected Rigor** Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's science program at that grade span? PS2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed. PS2 (K-4) SAE – 5 Use observations of light in relation to other objects/substances Comments to describe the properties of light (can be reflected, refracted, or absorbed). More Less Rigorous Rigorous Rigorous PS2 (K-2)-5a demonstrating when a shadow... 0 0 0 PS2 (3-4)-5a explaining what occurs when... 0 0 0 PS2 (3-4)-5b investigating with light sources 0 0 0 PS2 (K-4) SAE+INQ -6 Experiment, observe, or predict how heat might move from Comments one object to another. More **GSEs** Rigorous Rigorous Rigorous PS2 (K-2)-6a describing that the sun warms... 0 0 0 PS2 (K-2)-6b showing that heat moves from... PS2 (3-4)-6a describing how heat moves from... 0 0 0 PS2 (3-4)-6b showing that heat moves from 0 PS3 - The motion of an object is affected by forces. PS3 (K-4)-INO+SAE -7 Use data to predict how a change in force (greater/less) Comments might affect the position, direction of motion, or speed of an object (e.g., ramps and **GSEs** More Rigorous Rigorou Rigorous PS3 (K-2)-7a predicting the direction an object... 0 0 0 PS3 (K-2)-7b showing how pushing/pulling... 0 0 0 0 0 PS3 (K-2)-7c showing that different objects... 0 0 0 PS3 (3-4)-7a predicting the direction or speed... PS3 (3-4)-7b describing position relative to... 0 0 0 0 0 0 PS3 (3-4)-7c investigating and describing that... 0 PS3 (3-4)-7d conducting experiments to.. PS3 (K-4) INQ+ SAE -8 Use observations of magnets in relation to other objects to Comments describe the properties of magnetism (i.e., attract or repel certain objects or has no effect. **GSEs** More Rigorous Rigorou Rigorous PS3 (K-2)-8a observing and sorting objects... 0 0 0 0 0 0 PS3 (3-4)-8a using prior knowledge and... PS3 (3-4)-8b describing what happens when... 0 0 0 PS3 (3-4)-8c exploring relative strength of ...

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Question # 4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to								
promote coherent instruction? First	st, is each in	dividual GSE	coherent with	the Statement of E	Induring			
Knowledge under which it is listed? Second, as a whole, do these GSEs articulate well-balanced coverage of								
the major concepts within the EK	statement?	How could th	ey be improved	!?				
Go back and review ALL the GSEs	Go back and review ALL the GSEs within the Statement of Enduring Knowledge looking at them as a "GSE set."							
Does the set of GSEs within this Stat			•					
instruction?	,•=====================================	2012-1	1	T I	011			
	~~ ore comp	and of motto	Laving	GSEs for this EK State	ment coherent as a set			
PS1 - All living and nonliving thing				GDES IOI tills EIX State	ment concrent as a sec			
characteristic properties that distin		ubstance from	n anotner	Yes o	No o			
(independent of size or amount of s								
PS1 (K-4) INQ -1 Collect and organize data abordassify objects or draw conclusions about objects	s and their charac	cteristic		Comments				
properties (e.g., temperature, color, size, shape, w GSEs		exibility.) herence with the						
GSES		during Knowledge						
PS1 (K-2)-1a identifying, comparing, and	Yes	No						
PS1 (K-2)-1b recording observations/data	0	0						
PS1 (K-2)-1c using attributes of properties PS1 (3-4)-1a identifying, comparing, and	0	0						
PS1 (3-4)-1b recording and <u>analyzing</u>	0	0						
PS1 (3-4)-1c citing evidence (e.g., prior	0	0						
PS1 (3-4)-1d observing physical changes	0	0						
PS1 (K-4) POC -2 Make a prediction about wha	<u></u>			Comments				
common materials when heated or cooled or cate								
or gas.								
GSEs		nerence with the						
	Yes	during Knowledge No						
PS1 (K-2)-2a describing properties of solids	0	0						
PS1 (K-2)-2b identifying and comparing	0	0						
PS1 (K-2)-2c making logical predictions	0	0						
PS1 (3-4)-3a measuring the weight of objects PS1 (3-4)-3b using measures of weight to	0	0						
PS1 (3-4)-3c showing that the weight of an	0	0						
PS1 (K-4) SAE -3 Use measures of weight (data	to demonstrate t	that the whole		Comments				
equals the sum of its parts.								
GSEs		nerence with the						
	Yes Yes	during Knowledge No						
PS1 (K-2)-3a exploring the concept of weight	0	0						
PS1 (3-4)-3a measuring the weight of objects	0	0						
PS1 (3-4)-3b using measures of weight to	0	0						
PS1 (3-4)-3c showing that the weight of an		_	_	COP 6 ALL PIZ CLA				
PS2 - Energy is necessary for chan				GSEs for this EK State				
stored, transferred, and transform	ed, but cann	ot be destroy	ed.	Yes	No o			
				Comments				
PS2 (K-4) SAE -4 Given a specific example or il circuit, rubbing hands together), predict the obse								
bulb lights, a bell rings, hands warm up (e.g., a te								
happen when?".)		,						
GSEs		nerence with the						
	Statement of End Yes	during Knowledge No						
PS2 (K-2)-4a investigating with the sun	0	0						
PS2 (K-2)-4b using the senses to experiment	0	0						
PS2 (K-2)-4c identifying the sun as a source	0	0						
PS2 (3-4)-4a investigating observable effects PS2 (3-4)-4b using a variety of objects to	0	0						
PS2 (3-4)-4c describing or showing in many	0	0						
PS2 (3-4)-4d building a complete circuit	0	0						
PS2 (3-4)-4e using experimental data to	0	0						
PS2 (3-4)-4f making observations of natural	0	0						

Question #4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved? Go back and review ALL the GSEs within the Statement of Enduring Knowledge looking at them as a "GSE set." Does the set of GSEs within this Statement of Enduring Knowledge have the potential to promote coherent instruction? GSEs for this EK Statement coherent as a set PS2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred, and transformed, but cannot be destroyed. see section above PS2 (K-4) SAE - 5 Use observations of light in relation to other Comments objects/substances to describe the properties of light (can be reflected, refracted, or absorbed.). GSEs Individual coherence with the Statement of Enduring Knowledge PS2 (K-2)-5a demonstrating when a shadow... Yes No PS2 (3-4)-5a explaining what occurs when... 0 0 PS2 (3-4)-5b investigating with light sources... 0 0 PS2 (K-4) SAE+INQ -6 Experiment, observe, or predict how heat might move Comments from one object to another. Individual coherence with the **GSEs** Statement of Enduring Knowledge Yes No PS2 (K-2)-6a describing that the sun warms... PS2 (K-2)-6b showing that heat moves from... 0 0 PS2 (3-4)-6a describing how heat moves from... 0 0 PS2 (3-4)-6b showing that heat moves from... 0 GSEs for this EK Statement coherent as a set PS3 - The motion of an object is affected by forces. PS3 (K-4)-INQ+SAE -7 Use data to predict how a change in force (greater/less) Comments might affect the position, direction of motion, or speed of an object (e.g., ramps and balls). **GSEs** Individual coherence with the **Statement of Enduring** Knowledge No PS3 (K-2)-7a predicting the direction an object... PS3 (K-2)-7b showing how pushing/pulling... 0 0 PS3 (K-2)-7c showing that different objects... 0 0 PS3 (3-4)-7a predicting the direction or speed... 0 0 PS3 (3-4)-7b describing position relative to... 0 0 PS3 (3-4)-7c investigating and describing that... 0 0 0 PS3 (3-4)-7d conducting experiments to... PS3 (K-4) INQ+ SAE -8 Use observations of magnets in relation to other objects Comments to describe the properties of magnetism (i.e., attract or repel certain objects or has no effect. Individual coherence with the **GSEs** Statement of Enduring Knowledge No PS3 (K-2)-8a observing and sorting objects... PS3 (3-4)-8a using prior knowledge and... 0 0 PS3 (3-4)-8b describing what happens when... 0 PS3 (3-4)-8c exploring relative strength of ... 0

### **Question #1: Clarity of GSE**

Is the GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and state assessment? (Do I understand what learning will be assessed on the state assessment and the related curricular and/or instructional aspects?) If not, what aspect of the GLE needs further clarification? (E.g. clarify terminology, give examples, etc.)

## ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes.

through continual change processes.			
ESS1 (K-4) INQ -1 Given certain earth materials physical properties to sort, classify, and describe the		Comments	
GSEs	Curriculum/ Instruction	State Assessment	
ESS1 (K-2)-1a describing, comparing, and	0	0	
ESS1 (K-2)-1b recording observations/data	О	0	
ESS1 (K-2)-1c using attributes of properties	0	0	
ESS1 (3-4)-1a describing, comparing, and	0	0	
ESS1 (3-4)-1b recording and analyzing	0	0	
ESS1 (3-4)-1c citing evidence (e.g., prior ESS1 (3-4)-1d identifying the four basic	0	0	
ESSI (3-4)- <u>10 identifying the four basic</u>	Ü	Ü	
ESS1 (K-4) INQ -2 Use results from an experiment			Comments
how water interacts with earth materials (e.g., perce			
GSEs	Curriculum/ Instruction	State Assessment	
ESS1 (K-2)-2a conducting tests on how	0	0	
ESS1 (K-2)-2a conducting investigations and	0	0	
		_	
ESS 1 (K-4) NOS -3 Explain how the use of scien	•		Comments
senses and gather data about weather. (i.e., weather		,	
sock: wind intensity; anemometer: speed; thermom sticks/rulers: snow depth; rain gauges: rain amoun		re; meier	
GSEs	Curriculum/	State	
GSES	Instruction	Assessment	
ESS1 (K-2)-3a using scientific tools to	0	0	
ESS1 (3-4)-3a explaining how the use of	0	0	
ESS1 (3-4)-3b selecting appropriate tools	0	0	
ESS1 (K-4) INQ+SAE -4 Explain how wind, wate	r, or ice shape a	and reshape	Comments
GSEs	Curriculum/	State	
GSES	Instruction	Assessment	
ESS1 (K-2)-4a observing and recording	o	O	
ESS1 (3-4)-4a investigating local landforms	0	0	
ESS1 (3-4)-4b using or building models to	0	0	
ESS1 (3-4)-4c identifying sudden and gradual	0	0	
ESS1 (K-4) POC -5 Based on data collected from describe weather changes or weather patterns.	m daily weathe	r observations,	Comments
GSEs	Curriculum/	State	1
GOES	Instruction	Assessment	
ESS1 (K-2)-5a observing, recording, and	0	0	
ESS1 (K-2)-5b observe how clouds are related	0	0	
ESS1 (3-4)-5a observing, recording, comparing	0	0	
ESS1 (3-4)-5b describing water as it changes	0	0	
ESS1 (3-4)-5c explaining how this cycle of	0	0	

#### **Question #1: Clarity of GSE** Is the GSE articulated in a way that it is clear what is expected of classroom instruction/curriculum and state assessment? (Do I understand what learning will be assessed on the state assessment and the related curricular and/or instructional aspects?) If not, what aspect of the GLE needs further clarification? (E.g. clarify terminology, give examples, etc.) ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes. ESS1 (K-4) FAF -6 Given information about earth materials explain how their Comments characteristics lend themselves to specific uses Curriculum/ GSEs State Instruction Assessment 0 ESS1 (K-2)-6a Identifying which materials... ESS1 (3-4)-6a Determining and supporting... 0 ESS2 - The earth is part of a solar system, made up of distinct parts that have temporal and spatial interrelationships. There are no ESS2 State Assessment Targets at this Grade Span. The GSEs Comments listed below are assessed at the local level only. **GSEs** Curriculum/ State Instruction Assessment ESS2 (K-2)-7a observing that the sun can only... 0 0 ESS2 (K-2)-7b observing that the sun and moon... 0 ESS2 (K-2)-7c observing that the moon looks... 0 0 ESS2 (3-4)-7a observing that the sun, moon,... 0 0 ESS2 (3-4)-7b observing that the moon looks... 0 0 ESS2 (3-4)-7c recognizing that the rotation. There are no ESS2 State Assessment Targets at this Grade Span. The GSEs Comments listed below are assessed at the local level only. Curriculum/ GSEs State Instruction Assessment ESS2 (3-4)-8a recognizing that: the sun is the... 0 ESS2 (3-4)-8b recognizing that it takes. ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time. There are no ESS2 State Assessment Targets at this Grade Span. The GSEs Comments listed below are assessed at the local level only. GSEs Curriculum/ Instruction Assessment ESS3 (K-2)-9a observing that there are more... 0 0

0

0

ESS3 (3-4)-9a recognizing that throughout....

### **Question # 2: Clarity of Grade Span Differences**

Are the differences between the GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.

NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This may be due to increasing difficulty in some related GSE.

### ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes.

through continual change processes	S		
ESS1 (K-4) INQ -1 Given certain earth materials	s (soils, rocks or	minerals) use	Comments
physical properties to sort, classify, and describe them.			
GSEs	Differences are clear	Differences not clear	
ESS1 (K-2)-1a describing, comparing, and	0	0	
ESS1 (K-2)-1b recording observations/data	0	0	
ESS1 (K-2)-1c using attributes of properties	0	0	
ESS1 (3-4)-1a describing, comparing, and	0	0	
ESS1 (3-4)-1b recording and analyzing	0	0	
ESS1 (3-4)-1c citing evidence (e.g., prior	О	0	
ESS1 (3-4)-1d identifying the four basic	0	0	
ESS1 (K-4) INQ -2 Use results from an experime			Comments
how water interacts with earth materials (e.g., per	colation, erosion,	frost heaves).	
GSEs	Differences are clear	Differences not clear	
ESS1 (K-2)-2a conducting tests on how	0	0	
ESS1 (K-2)-2a conducting investigations and	0	0	
ESS 1 (K-4) NOS –3 Explain how the use of scientific tools helps to extend senses and gather data about weather. (i.e., weather/wind vane: direction; wind sock: wind intensity; anemometer: speed; thermometer: temperature; meter sticks/rulers: snow depth; rain gauges: rain amount in inches).		Comments	
GSEs	Differences are clear	Differences not clear	
ESS1 (K-2)-3a using scientific tools to	0	0	
ESS1 (3-4)-3a explaining how the use of	0	0	
ESS1 (3-4)-3b selecting appropriate tools	0	0	
ESS1 (K-4) INQ+SAE -4 Explain how wind, wat the earth.	er, or ice shape a	and reshape	Comments
GSEs	Differences	Differences	
GSES	are clear	not clear	
ESS1 (K-2)-4a observing and recording	0	0	
ESS1 (3-4)-4a investigating local landforms	0	0	
ESS1 (3-4)-4b using or building models to	0	0	
ESS1 (3-4)-4c identifying sudden and gradual	0	0	
ESS1 (K-4) POC -5 Based on data collected fr describe weather changes or weather patterns.	om daily weathe	r observations,	Comments
GSEs	Differences are clear	Differences not clear	
ESS1 (K-2)-5a observing, recording, and	0	0	
ESS1 (K-2)-5b observe how clouds are related	0	0	
ESS1 (3-4)-5a observing, recording, comparing	0	0	
ESS1 (3-4)-5b describing water as it changes	0	0	
ESS1 (3-4)-5c explaining how this cycle of	0	0	
		1	I.

### Question # 2: Clarity of Grade Span Differences

Are the differences between the GSEs of adjacent grade spans clear? They should show the appropriate developmental growth as they progress K - high school.

NOTE: In some cases, no differences are articulated between the adjacent (corresponding) GSEs. This may be due to increasing difficulty in some related GSE.

# ${\it ESS1}$ - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes.

ESS1 (K-4) FAF -6 Given information about earth materials explain how their characteristics lend themselves to specific uses.			Comments
GSEs	Differences are clear	Differences not clear	
ESS1 (K-2)-6a identifying which materials	0	0	
ESS1 (3-4)-6a determining and supporting	0	0	

## ESS2 - The earth is part of a solar system, made up of distinct parts that have temporal and spatial interrelationships.

interrelationships.			
There are no ESS2 State Assessment Targets at this Grade Span. The GSEs listed below are assessed at the local level only			Comments
GSEs	Differences are clear	Differences not clear	
ESS2 (K-2)-7a observing that the sun can only	0	0	
ESS2 (K-2)-7b observing that the sun and moon	0	0	
ESS2 (K-2)-7c observing that the moon looks	0	0	
ESS2 (3-4)-7a observing that the sun, moon,	0	0	
ESS2 (3-4)-7b observing that the moon looks	0	0	
ESS2 (3-4)-7c recognizing that the rotation	0	0	
There are no ESS2 State Assessment Targets at this listed below are assessed at the local level only.	Grade Span. T	The GSEs	Comments
GSEs	Differences	Differences	
	are clear	not clear	
ESS2 (3-4)-8a recognizing that: the sun is the	0	0	
ESS2 (3-4)-8b recognizing that it takes	0	0	

### ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time.

There are no ESS2 State Assessment Targets at this listed below are assessed at the local level only.	Grade Span. T	Comments	
GSEs	Differences are clear	Differences not clear	
ESS3 (K-2)-9a observing that there are more ESS3 (3-4)-9a recognizing that throughout	0	0	

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### **Question 3: Expected Rigor**

Is the GSE more rigorous, similar to, or less rigorous than what is presently expected in your school's science program at that grade span?

ESS1 - The earth and earth material	ls as we l	know the	m today	have developed over long periods of time,
through continual change processes.				
ESS1 (K-4) INQ -1 Given certain earth materials	(soils, rocks	or minerals	) use	Comments
physical properties to sort, classify, and describe the	m.			
GSEs	More Rigorous	As Rigorous	Less Rigorous	
ESS1 (K-2)-1a describing, comparing, and	0	0	0	
ESS1 (K-2)-1a describing, comparing, and  ESS1 (K-2)-1b recording observations/data	0	0	0	
ESS1 (K-2)-1c using attributes of properties	0	0	0	
ESS1 (3-4)-1a describing, comparing, and	0	0	0	
ESS1 (3-4)-1b recording and analyzing	0	0	0	
ESS1 (3-4)-1c citing evidence (e.g., prior	0	0	0	
ESS1 (3-4)-1d identifying the four basic	0	0	0	
ESS1 (K-4) INQ -2 Use results from an experimen	it to draw co	nclusions a	bout how	Comments
water interacts with earth materials (e.g., percolatio				
GSEs	More Rigorous	As Rigorous	Less Rigorous	
ESS1 (K-2)-2a conducting tests on how	0	0	0	
ESS1 (K-2)-2a conducting investigations and	0	0	0	
intensity; anemometer: speed; thermometer: temperature; meter sticks/rulers: snow depth; rain gauges: rain amount in inches).				
GSEs	More Rigorous	As Rigorous	Less Rigorous	
ESS1 (K-2)-3a using scientific tools to	0	0	0	
ESS1 (3-4)-3a explaining how the use of	0	0	0	
ESS1 (3-4)-3b selecting appropriate tools	0	0	0	
ESS1 (K-4) INQ+SAE-4 Explain how wind, water	r, or ice sha	pe and resho	ape the	Comments
earth.				
GSEs	More Rigorous	As Rigorous	Less Rigorous	
ESS1 (K-2)-4a observing and recording	0	o	0	
ESS1 (3-4)-4a investigating local landforms	0	0	0	
ESS1 (3-4)-4a investigating local landforms ESS1 (3-4)-4b using or building models to	0	0	0	
ESS1 (3-4)-4c identifying sudden and gradual	0	0	0	
ESS1 (K-4) POC -5 Based on data collected j	rom dailv	weather ob	servations.	Comments
describe weather changes or weather patterns.				
GSEs	More Rigorous	As Rigorous	Less Rigorous	
ESS1 (K-2)-5a observing, recording, and	0	0	0	
ESS1 (K-2)-5b observe how clouds are related	0	0	0	
ESS1 (3-4)-5a observing, recording, comparing	0	0	0	
ESS1 (3-4)-5b describing water as it changes	0	0	0	
ESS1 (3-4)-5c explaining how this cycle of	0	0	0	

O4: 2. E4-1 D:						
Question 3: Expected Rigor	. 4 1	<b></b>				
		ess rigo	rous tna	n what is presently expected in your school's		
science program at that grade spa						
	s as we l	know the	m today	have developed over long periods of time,		
through continual change processes.						
ESS1 (K-4) FAF -6 Given information about earth materials explain how their characteristics lend themselves to specific uses				Comments		
GSEs	More Rigorous	As Rigorous	Less Rigorous			
ESS1 (K-2)-6a identifying which materials ESS1 (3-4)-6a determining and supporting	0	0	0			
ESS2 - The earth is part of a solar sy	stem, m	ade up o	f distinct	parts that have temporal and spatial		
interrelationships.	ŕ	_				
There are no ESS2 State Assessment Targets at this below are assessed at the local level only.	Grade Spar	ı. The GSE	s listed	Comments		
GSEs	More Rigorous	As Rigorous	Less Rigorous			
ESS2 (K-2)-7a observing that the sun can only	0	0	0			
ESS2 (K-2)-7b observing that the sun and moon ESS2 (K-2)-7c observing that the moon looks	0	0	0			
ESS2 (3-4)-7a observing that the sun, moon,	0	0	0			
ESS2 (3-4)-7b observing that the moon looks	0	0	0			
ESS2 (3-4)-7c recognizing that the rotation	0	0	0			
There are no ESS2 State Assessment Targets at this Grade Span. The GSEs listed below are assessed at the local level only.						
GSEs	More	As	Less			
7992 (2.1) 0	Rigorous	Rigorous	Rigorous			
ESS2 (3-4)-8a recognizing that: the sun is the ESS2 (3-4)-8b recognizing that it takes	0	0	0			
, , , ,						
ESS3 The origin and evolution of ga	laxies aı	nd the ur	niverse d	emonstrate fundamental principles of physical		
science across vast distances and tim	e.					
There are no ESS2 State Assessment Targets at this Grade Span. The GSEs listed below are assessed at the local level only.						
GSEs	More Rigorous	As Rigorous	Less Rigorous			
ESS3 (K-2)-9a observing that there are more ESS3 (3-4)-9a recognizing that throughout	0	0	0			

Ouestion #4: Does the set of GSEs within each Statement of Enduring Knowledge have the potential to promote coherent instruction? First, is each individual GSE coherent with the Statement of Enduring Knowledge under which it is listed? Second, as a whole, do these GSEs articulate well-balanced coverage of the major concepts within the EK statement? How could they be improved? Go back and review ALL the GSEs within the Statement of Enduring Knowledge looking at them as a "GSE set." Does the set of GSEs within this Statement of Enduring Knowledge have the potential to promote coherent instruction? GSEs for this EK Statement coherent as a set ESS1 - The earth and earth materials as we know them today have developed over long periods of time, through continual change processes. Yes 0 0 ESS1 (K-4) INO -1 Given certain earth materials (soils, rocks or minerals) use Comments physical properties to sort, classify, and describe them **GSEs** Individual coherence with the Statement of Enduring Knowledge ESS1 (K-2)-1a describing, comparing, and ... 0 ESS1 (K-2)-1b recording observations/data... ESS1 (K-2)-1c using attributes of properties... 0 ESS1 (3-4)-1a describing, comparing, and... 0 ESS1 (3-4)-1b recording and analyzing... 0 ESS1 (3-4)-1c citing evidence (e.g., prior... 0 ESS1 (3-4)-1d Identifying the four basic... ESS1 (K-4) INQ -2 Use results from an experiment to draw conclusions about how Comments water interacts with earth materials (e.g., percolation, erosion, frost heaves) **GSEs** Individual coherence with the Statement of Enduring Knowledge Yes No ESS1 (K-2)-2a conducting tests on how... 0 ESS1 (K-2)-2a conducting investigations and... ESS 1 (K-4) NOS -3 Explain how the use of scientific tools helps to extend senses and Comments gather data about weather. (i.e., weather/wind vane: direction; wind sock: wind intensity: anemometer: speed: thermometer: temperature: meter sticks/rulers: snow depth; rain gauges: rain amount in inches) Individual coherence with the **GSEs** Statement of Enduring Knowledge Yes Nο 0 0 ESS1 (K-2)-3a using scientific tools to... 0 0 ESS1 (3-4)- 3a explaining how the use of... ESS1 (3-4)-3b selecting appropriate tools... ESS1 (K-4) INQ+SAE-4 Explain how wind, water, or ice shape and reshape the earth Comments **GSEs** Individual coherence with the Statement of Enduring Knowledge ESS1 (K-2)-4a observing and recording... 0 0 ESS1 (3-4)-4a investigating local landforms... 0 0 ESS1 (3-4)-4b using or building models to... ESS1 (3-4)-4c identifying sudden and gradual... ESS1 (K-4) POC-5 Based on data collected from daily weather observations, describe Comments weather changes or weather patterns Individual coherence with the Statement of Enduring Knowledge Yes No ESS1 (K-2)-5a observing, recording, and ... 0 0 ESS1 (K-2)-5b observe how clouds are related... 0 0 ESS1 (3-4)-5a observing, recording, comparing... 0 0 ESS1 (3-4)-5b describing water as it changes... ESS1 (3-4)-5c explaining how this cycle of... ESS1 (K-4) FAF -6 Given information about earth materials explain how their Comments characteristics lend themselves to specific uses Individual coherence with the **GSEs** Statement of Enduring Knowledge Yes No 0 0 ESS1 (K-2)-6a identifying which materials... ESS1 (3-4)-6a determining and supporting

Question # 4: Does the set of GSEs promote coherent instruction? First, Knowledge under which it is listed?	, is each indiv	vidual GSE c	oherent with	the Sta	tement of E	nduring	ξ.
S				lculate	wen-parance	ea cover	rage of the
major concepts within the EK staten				"~	~= . <b>11</b>		
Go back and review ALL the GSEs within the S				n as a "G	SE set." Does th	ne set of G	SEs within
this Statement of Enduring Knowledge have the	e potential to pro	mote coherent ir	nstruction?				
ESS2 – The earth is part of a solar sy	ystem, made	up of distinc	t parts that	GSEs fo	or this EK Staten	nent coher	ent as a set
have temporal and spatial interrelat	ionships.			Yes	0	No	0
There are no ESS2 State Assessment Targets at this	Grade Span. The	GSEs listed			Comments		
below are assessed at the local level only.	-	ļ					
GSEs	Individual cohe Statement of End						
	Yes	No					
ESS2 (K-2)-7a observing that the sun can only	0	0					
ESS2 (K-2)-7b observing that the sun and moon	О	0					
ESS2 (K-2)-7c observing that the moon looks	0	0					
ESS2 (3-4)-7a observing that the sun, moon	0	0					
ESS2 (3-4)-7b observing that the moon looks	0	0					
ESS2 (3-4)-7c recognizing that the rotation	0	0					
There are no ESS2 State Assessment Targets at this	Grade Span. The	GSEs listed			Comments		
below are assessed at the local level only.	-	ļ					
GSEs	Individual cohe	erence with the					
	Statement of End						
	Yes	No					
ESS2 (3-4)-8a recognizing that: the sun is the	0	0					
ESS2 (3-4)-8b recognizing that it takes	0	0					
ESS3 - The origin and evolution of g				GSEs fo	or this EK Staten	nent coher	ent as a set
fundamental principles of physical se	cience across	vast distanc	es and time.	Yes	0	No	0
There are no ESS2 State Assessment Targets at this Grade Span. The GSEs listed				Comments			
below are assessed at the local level only.							
GSEs	Individual cohe						
	Statement of End						
77000 27 6 0 1 1 1 1	Yes	No					
ESS3 (K-2)-9a observing that there are more	0	0					
ESS3 (3-4)-9a recognizing that throughout	0	0					

question #5: What science content (important concepts) is missing in these draft science GSEs? Where re there gaps in content? This information is most essential for developing the science GSEs for local arriculum, instruction and assessment.						
Relevant EK (Identify by domain and number - ex. LS1)	Content/Concepts Needing Inclusion (Please provide as much detail as possible)					

Rhode Island Grade Span Expectations K-12 in Science Field Review – Elementary (K-4) **Appendix A: GSE Development in Science** 

#### Givens:

- GSEs in science are developed in grade spans K-2, 3-4, 5-6, 7-8 and high school.
- High school science GSEs for <u>all</u> students cover the content and skills eligible for the large-scale assessment given at the end of Grade 11.
- Examples of "Extensions" to the high school science GSEs are provided to guide the more in depth study of particular topic and for local curriculum and assessment
- The science GSEs are for state assessment and local curriculum and assessment purposes.
- The science GSEs are aligned with, but not necessarily limited by, existing state frameworks.

**Purpose of GSE:** The science GSEs are specified for a common, large-scale, state level assessment, and some are identified for local curriculum and assessment option.

**Definition of a GSE:** A science GSE is a stated objective that is aligned with the Rhode Island science framework and the national science standards, by grade span. A GSE differentiates performance on concepts, skills, or content knowledge between adjacent grade levels and spans, and as a set, leads to focused, coherent, and developmentally appropriate instruction without narrowing the curriculum

#### **Criteria for the Development of GSEs:**

- 1) GSEs in science **must** relate to national science standards, but not be limited by them.
- 2) GSEs should maintain a balance between a generalizable skill, concept, or piece of knowledge, **and** enough specificity to differentiate skill, concept, or knowledge between adjacent grades, to make it clear to teachers what is to be taught and learned, without being so specific that it narrows the curriculum.
- 3) GSEs should explicitly indicate cognitive demand (interaction of content and process). There should be a mix of cognitive demands at all grade levels, not an assumption that students in lower grades do less cognitively demanding work. (The verbs used in the construction of the science GSEs are consistent with the Webb's Depth of Knowledge (DOK) levels. Most science GSEs are written at DOK levels 2 and 3) see TABLE 1
- 4) GSEs should be specific and clear enough to know how they will be assessed.
- 5) GSEs should contain language that describes expected performance so that a student's achievement in relation to the GSE can be validly assessed for state assessment purposes.
  - a. **Not assessable** E.g., "Students demonstrate an understanding of characteristic properties of matter."
  - b. **Assessable** E.g., Students demonstrate an understanding of characteristic properties of matter by <u>citing evidence</u> (e.g., <u>prior knowledge</u>, <u>data</u>) to support conclusions about why objects are grouped/<u>not grouped together</u>

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Rhode Island Grade Span Expectations K-12 in Science Field Review – Elementary (K-4)

#### Criteria for the Development of a SET of Grade Span Expectation in Science

- The set of GSEs should be of comparable grain size.
- Concepts, skills, and knowledge should be differentiated between adjacent grade spans.
- The set of GSEs within a domain of science (Life Science, Physical Science, Earth and Space Science) and the Statement of Enduring Knowledge reflects the relative importance as defined by a review of national and state science standards.
- The set of GSEs should promote coherent, focused, developmentally appropriate instruction, as opposed to isolated instruction *just* on topics, facts, or individual skills that need to be covered.
- The set of GSEs should be reasonable to learn adequately (assuming prior learning).
- The set of GSEs should be constructed as a continuum of learning. Success in one grade span should be a good predictor of success in the following year.
- Success on GSEs across multiple years should be a good predictor of performance at the national benchmark years. (i.e., NAEP).

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TABLE 1 Sample Descriptors for each of the DOK Levels in Science, based on Webb (working draft K. Hess, updated September 2005)						
Level 1 Level 2		Level 3	Level 4			
a. Recall & Reproduction  a. Recall or recognize a fact, term, definition, simple procedure (such as one step), or property  b. Demonstrate a rote response  c. Use a well-known formula  d. Represent in words or diagrams a scientific concept or relationship  e. Provide or recognize a standard scientific representation for simple phenomenon  f. Perform a routine procedure, such as measuring length  g. Perform a simple science process or a set procedure (like a recipe)  h. Perform a clearly defined set of steps  i. Identify, calculate, or measure	Skills & Concepts  a. Specify and explain the relationship between facts, terms, properties, or variables  b. Describe and explain examples and nonexamples of science concepts  c. Select a procedure according to specified criteria and perform it  d. Formulate a routine problem given data and conditions  e. Organize, represent, and compare data  f. Make a decision as to how to approach the problem  g. Classify, organize, or estimate  h. Compare data  i. Make observations  j. Interpret information from a simple graph  k. Collect and display data	a. Interpret information from a complex graph (such as determining features of the graph or aggregating data in the graph)  b. Use reasoning, planning, and evidence  c. Explain thinking (beyond a simple explanation or using only a word or two to respond)  d. Justify a response  e. Identify research questions and design investigations for a scientific problem  f. Use concepts to solve non-routine problems/more than one possible answer  g. Develop a scientific model for a complex situation  h. Form conclusions from experimental or observational data  i. Complete a multi-step problem that involves planning and reasoning	a. Select or devise approach among many alternatives to solve problem b. Based on provided data from a complex experiment that is novel to the student, deduct the fundamental relationship between several controlled variables. c. Conduct an investigation, from specifying a problem to designing and carrying out an experiment, to analyzing its data and forming conclusions d. Relate ideas within the content area or among content areas e. Develop generalizations of the results obtained and the strategies used and apply them to new problem situations			
NOTE: If the knowledge necessary to answer an item automatically provides the answer, it is a Level 1.	NOTE: If the knowledge necessary to answer an item does not automatically provide the answer, then the item is at least a Level 2. Most actions imply more than one step.  NOTE: Level 3 is complex and abstract. If more than one response is possible, it is at least a Level 3 and calls for use of reasoning, justification, evidence, as support for the response.	<ul> <li>j. Provide an explanation of a principle</li> <li>k. Justify a response when more than one answer is possible</li> <li>l. Cite evidence and develop a logical argument for concepts</li> <li>m. Conduct a designed investigation</li> <li>n. Research and explain a scientific concept</li> <li>O. Explain phenomena in terms of concepts</li> </ul>	NOTE: Level 4 activities often require an extended period of time for carrying out multiple steps; however, time alone is not a distinguishing factor if skills and concepts are simply repetitive over time.			